

# USING QUALITY ASSURANCE MECHANISMS TO IMPROVE PATIENT CARE

As technology advances, machines for the diagnosis and treatment of illnesses, including devices that utilize ionizing radiation, continue to become more complex, providing clearer, more detailed images of the body's organs and more effective treatment of diseases like cancer.

For example, state-of-the-art radiotherapy devices allow medical professionals to better shape radiation beams to match cancerous tumours, therefore improving treatment for patients undergoing radiotherapy.

However, if these complex devices are improperly calibrated or incorrectly used, patients may receive the wrong dose of ionizing radiation, a situation that could end up harming patients and medical staff, creating damage where there should be none.

The objective and goal should be to give the correct amount of radiation to produce diagnostic imaging or to treat cancer. In both situations, too much radiation can harm the patient and not enough radiation will produce a diagnostic image that does not have enough information for the physician. In therapy, too little radiation will fail to destroy all malignant cells resulting in tumour regrowth.

To address the problems of overexposure and underexposure of radiation during medical procedures, the IAEA helps Member States to achieve and maintain high standards of professional practice through education and training, and through the establishment and implementation of quality assurance programmes. The IAEA's quality management services, delivered primarily through its technical cooperation programme, allow the Agency to support medical facilities around the world with tools they can use to improve the practice of radiation medicine.

The Agency has developed comprehensive guidelines that can support the auditing process in all disciplines of radiation medicine, namely nuclear medicine (Quality Assurance in Nuclear Medicine — QUANUM), radiation oncology (Quality Assurance Team in Radiation Oncology — QUATRO) and diagnostic radiology (Quality Assurance in Diagnostic Radiology — QUADRIL).



**QUANUM** supports internal and external clinical audits of nuclear medicine, and encourages medical facilities to adopt a culture of consistent review where practices and procedures are routinely audited.

Physicists discussing radiation measurements being taken during a QUATRO audit in Rijeka, Croatia.  
(Photo: E. Izewski /IAEA)

External evaluations of radiation oncology are provided through **QUATRO**, emphasizing quality improvement through the comprehensive review of radiotherapy procedures, structure and process.

**QUADRIL** supports external clinical audits of diagnostic radiology practices, and concentrates on improving the quality of patient care, and the provision and organization of clinical services.

Although these auditing guidelines might differ in the details of their content, they all share the same basic characteristics, are performed by multidisciplinary teams of experts experienced in the corresponding area of radiation medicine and aim at quality improvement. In order to assist the auditors during the audit process, and at the same time to facilitate an independent review process, standard, detailed questionnaires and audit report forms have been developed and included in the IAEA guidelines.

This auditing process is completely voluntary. However, it is only through a comprehensive clinical audit that a facility can receive a systematic review of the current practice and identification of areas for improvement.

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